



Proposed Implementation Plan to Adopt
Updates of the Regulatory
Air Dispersion Models referenced in O.Reg. 419/05
Presentation to AWMA Air Practitioner's Group
February 11th, 2015

Overview

- Background and Purpose
- Status of Model Versions/Updates
- Proposed DRAFT Implementation Plan
- Effect on Pending Environmental Compliance Approval (ECA) Applications and Emission Summary and Dispersion Modelling Report (ESDMs)
- Compliance Options

Purpose

- Provide preliminary details of the draft Implementation Plan for the impending update to regulatory air dispersion models under the Local Air Quality Regulation (O. Reg. 419/05)
 - Highlight which models are affected
 - Outline regulatory versions, and requirements if non-regulatory versions are used
 - How to identify which versions were used in a submission
 - Managing existing and incoming ECA applications and ESDM updates
 - Compliance Options
- To seek stakeholder feedback on the draft Implementation Plan that will facilitate a process of formally adopting updated regulatory air dispersion models under the Local Air Quality Regulation (O. Reg. 419/05).

Background

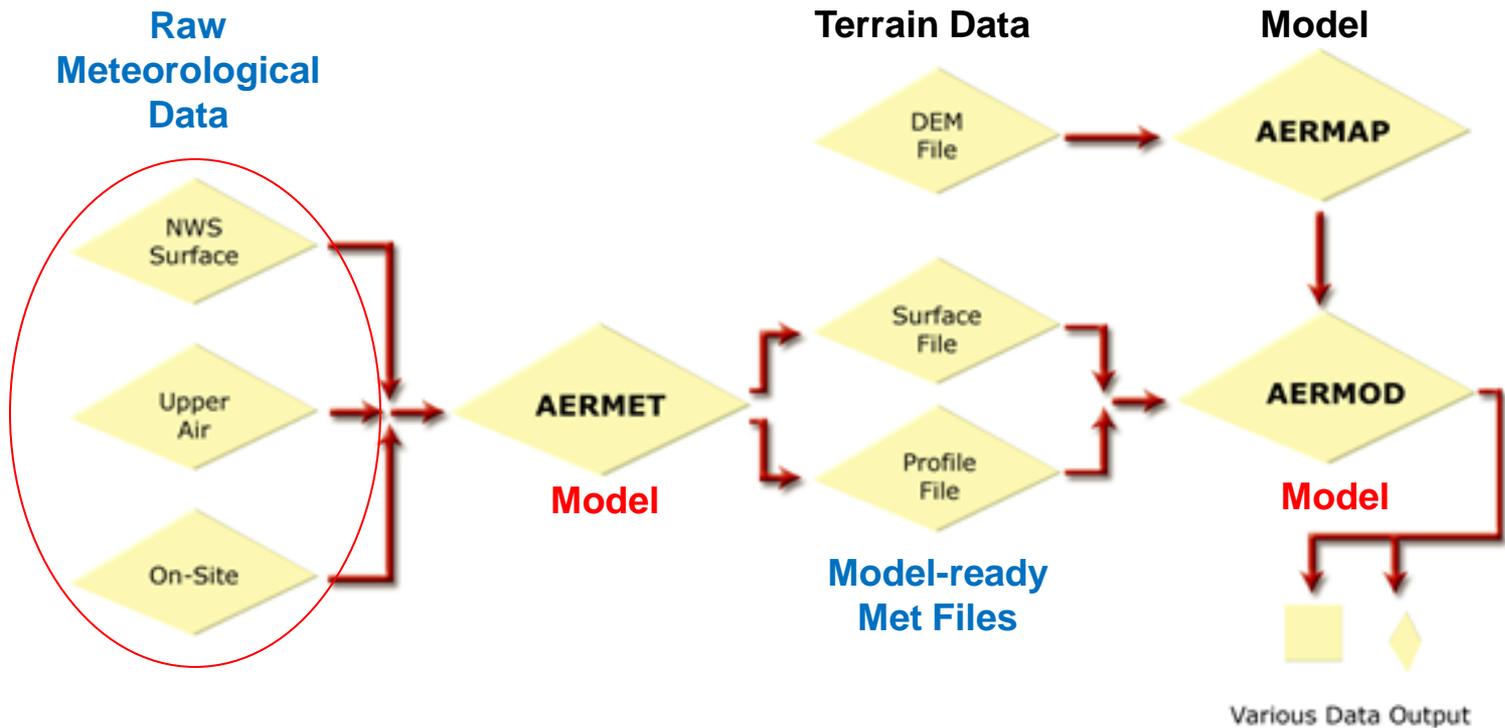
- O.Reg.419/05 requires that an approved dispersion model be used when completing an ESDM report to demonstrate compliance with air standards.
- Approved dispersion models under O.Reg419/05 are as follows:
 - AERMOD (Air dispersion model)
 - AERMET (Meteorological data processor)
 - ASHRAE (Method of Self-contamination calculation)
 - SCREEN 3 (Air dispersion model)
 - Reg.346 (Air dispersion model)*
- There are numerous versions of each model
 - AERMOD (v06341, v07026, v09292, v11059, v11103, v11353, v12060, v12345, v13350, v14134)
 - AERMET (v06341, v11059, v12345, v13350, v14134)
 - ASHRAE (2003, 2007, 2011)
- **Specific versions of AERMOD, AERMET and ASHRAE are considered to be “regulatory versions” as amended/updated from time to time.**
 - Updates advance the science or fix errors
- MOECC staff from EMRB, SDB, EAB, WCR and LeSB have jointly developed a draft Implementation Plan to reduce regulatory uncertainty while moving forward with model version updates

*Only applies to facilities subject to s.19 of O.Reg.419/05 [Schedule 2 standards]

Model Updates: Regulatory Context

- O. Reg. 419/05 is worded such that:
 - regulatory model updates are adopted by “rolling” reference which means that every time the USEPA updates the models (to advance science or fix errors) there is no need to amend the regulation.
 - As per s177 (6) of the *Ontario Environmental Protection Act* (EPA), rolling reference requires MOECC to post an EBR Information Notice (IN) on the model updates before formally adopting them.
- Rolling reference approach was meant to:
 - be an administrative process - implemented in a quick and seamless manner
 - ensure we are using the best and most currently available science to predict compliance status

Model Components



Model Updates: Regulatory Status

- O.Reg.419/05 was amended in 2007
 - Some amendments specifically pertained to the air dispersion models
- **Current Regulatory versions are:**
 - **AERMOD 07026, AERMET 06341, ASHRAE 2007**
- Since 2007 there have been 8 updates to the USEPA AERMOD model
 - 6 included mainly administrative/computer bug fixes
 - Only 2 included technical updates which initiated further assessment by MOECC
- The Ministry has not yet formally adopted any of these model updates.

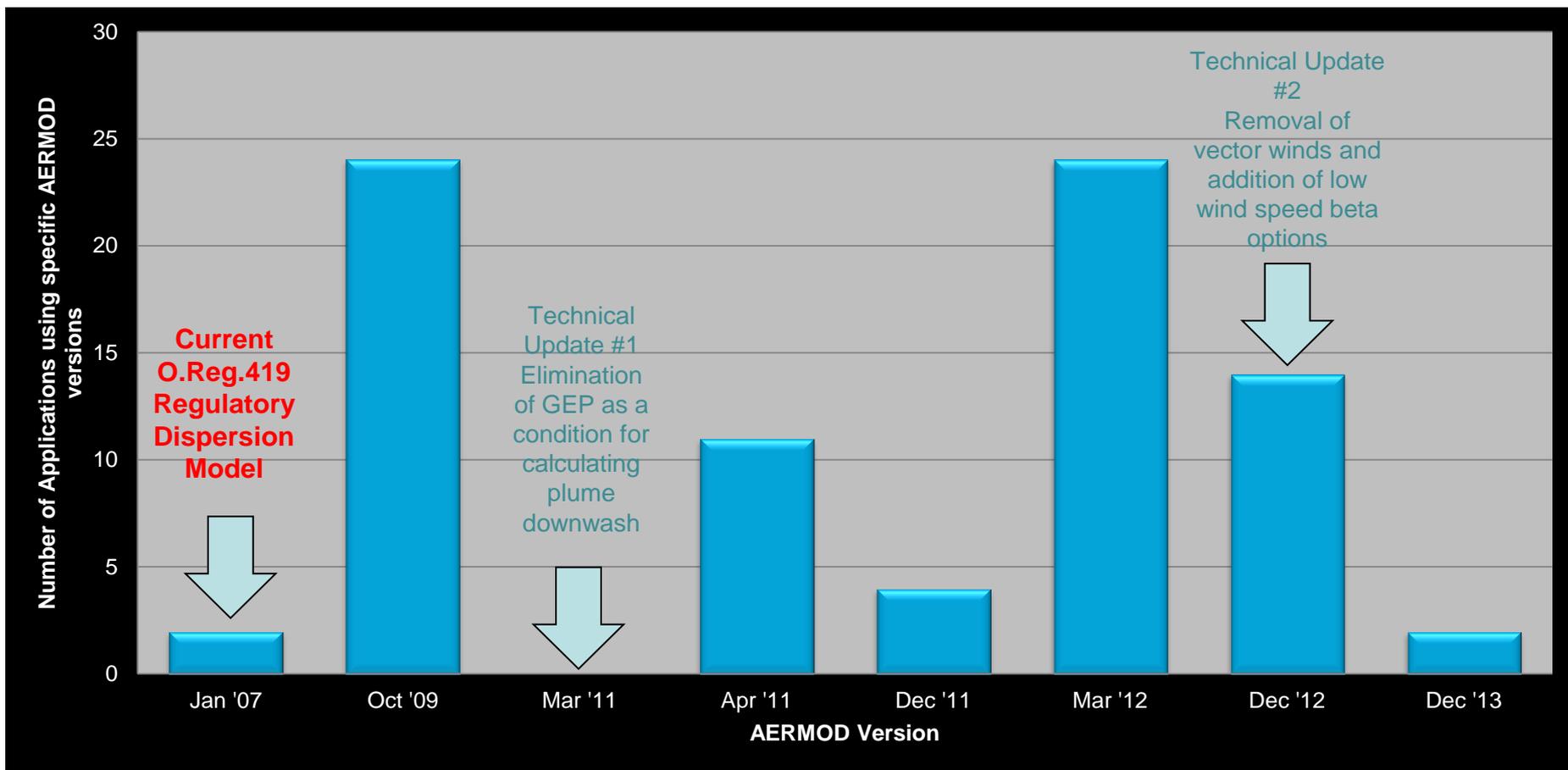
Assessment of Current Model Versions

- Model updates can result in both increases and decreases to a facility's modelled POI concentrations
 - Depends on the source types (configuration/characteristics), emissions and model options chosen
 - Possible some facilities could experience changes in compliance status as a result of using these updated model versions.
- MOECC highlights from the model update Consequence Analysis:
 - Significant technical change in 2011 version affecting taller stacks
 - Taller stacks no longer assumed to have the same dispersion effect (i.e. elimination of the GEP height as a limiter on downwash calculations for modelled point sources or stacks)
 - Resulted in concentrations from a single source (i.e. taller stack) possibly increasing by 10 – 60%.
 - Most facilities have a combination of taller stacks and ground level sources
 - Concentrations for other sources type not significantly affected.
- MOECC examined a number of facilities that could be affected as a result of these model updates

Model Updates: Current Status

- Many stakeholders are unaware that MOECC has not formally adopted the updated model versions, and as such may already be using the updated versions without appropriate approval to do so
 - commercial software products are generally updated automatically and use the most updated version **by default**
 - Until model updates are formally adopted, individual proponents may submit a request for MOECC approval (i.e. Notice) to use the USEPA model updates before they are formally adopted
- MOECC completed a survey in spring 2014 to capture a “snap shot” of model versions being used in current ECA applications
 - More than 2/3rd of applicants using AERMOD are already using an updated version that incorporates the technical updates
 - It has been nearly 2 years since the last technical update, and it appears that many facilities have transitioned to the newer versions without issue (i.e. the model version change did not affect their compliance status)
 - Updates to the model are not expected to cause wide spread issues and concerns among the majority of facilities in Ontario

“Snap Shot” of AERMOD Versions Used



Note: Spring 2014 “Snap Shot” is based on a survey of more recent Environmental Compliance Approval applications

Need for Implementation Plan

- An implementation plan will help MOECC and stakeholders deal with potential challenges with transitioning to updated model versions
 - external stakeholders requested a practical implementation process
- WHAT MODEL VERSION ARE YOU CURRENTLY USING?
 - **CHECK!!!!!! You may already be using an updated version.**
 - Until formal adoption, you may wish to consider using a more recent version.
 - Currently, MOECC receives requests by individual proponents (under s. 7 of the regulation) to be allowed to use more recent, non-regulatory versions of the model.

DRAFT Implementation Plan Summary

- MOECC staff from EMRB, EAB, SDB and WCR worked together to develop a draft Implementation Plan to address potential challenges with adopting model updates.
- The DRAFT Plan includes the following:
 1. MOECC intends to monitor regulatory model update developments, and if necessary, assess the potential effect via consequence analysis, and discuss the results with stakeholders (e.g. EWG, Air Waste Management Association, practitioners group).
 2. MOECC proposes to pre-notify stakeholders via e-mail each year (e.g. October), of the latest model version updates (if any), and indicate that we intend to post an Information Notice (IN) on the EBR to legally adopt the latest model version updates in approximately 6 months (e.g. April).

DRAFT Implementation Plan Summary (2)

3. MOECC proposes to post an IN on the EBR within the specified period (e.g. April)
4. If AERMET is also updated, Regional and local meteorological data sets will be affected.
 - MOECC intends to reprocess Regional meteorological data sets with the new regulatory version of AERMET and re-post the data.
 - MOECC intends to notify all holders of Section 13 approvals for site-specific meteorological data that their data requires reprocessing using the new version of AERMET (if applicable).
5. EMRB, SDB, and OD (EAB and WCR) will work to jointly assess existing s7 Notices to use updated models, to determine if they require amendment.
6. Update guidance documents and/or create a Technical Bulletin to reflect the model update process.

Implementation Plan Step 1 - Consequence Analysis Details

- MOECC intends to undertake an assessment of each update to assess the potential changes in predicted concentrations
 - Comparative analysis includes various source types and configurations.
 - Analysis gets repeated for the same diverse set of sources, meteorological data set, and model set-ups at each update, but using the revised model versions for AERMET and AERMOD as appropriate.
 - tall stacks, short stacks (both with buoyant and non-buoyant emissions), area sources and volume sources (both close to and removed from the property boundary).

Implementation Plan Step 2 - Stakeholder Pre-Notification Details

- 6 months prior to the adoption of an updated model version, MOECC intends to pre-notify stakeholders via e-mail, including:
 - Air Standards/Reg 419 External Working Group [EWG]
 - Air Practitioner's Group, and
 - SDB's broader O.Reg.419 e-mail groups.
 - MOECC will also request AWMA post the pre-notification on their website
 - If possible MOECC will post on ontario.ca website
- The intent of the Pre-Notification is to signal the upcoming change to a specific model version and the anticipated effective date of the change (i.e. the Implementation Date).
 - The proposed annual Pre-Notification date is October 1st, with a proposed annual implementation date of April 1st.
 - This should provide clarity to the regulated community with respect to model versions to use in Annual Updates to ESDM reports which are usually due by March 31st each year.

Implementation Plan Step 2 - Stakeholder Pre-Notification Details (2)

- Proponents may choose to conduct site specific modelling analyses to determine the effect on individual facilities
 - MOECC consequence analysis will not consider the effect of multiple source combinations which are site specific considerations.
 - If necessary, proponents should work with their local MOECC District Office to develop a practical path to remain in compliance after the Implementation
 - This may include short term transitional Orders, SSS, Technical Standards

Implementation Plan Step 3 – Notification of Adoption of New Model Version(s)

- To formally adopt a new model version, an Information Notice specifying the change must be posted to the EBR. The date of the posting is the date that the updated model version takes effect. This is known as the Implementation Date.
 - Once the model version update is in effect, the updates will apply to any ESDM reports completed after the Implementation Date, as if the change was in effect for the entire calendar year.
 - If the models are updated in 2015 any annual updates completed in early 2016 should be done as if the model version was in effect for all of 2015.

Implementation Plan Step 4 - Meteorological Data Details (Regional)

- AERMET 06341 was used to process all posted Regional Meteorological data sets as well as all local/site specific met sets for AERMOD.
- MOECC intends to reprocess the same raw Regional met data (i.e. 1996 – 2000) with the updated version of AERMET and re-post after the Implementation Date.
 - Only applies when AERMET is updated

Implementation Plan Step 4 - Meteorological Data Details (Local)

- Existing local/site specific met data sets and s.13 Approvals provided previously will require reprocessing.
 - EMRB proposes to send letters to all holders of these approvals that do not contain specific reference to the AERMET version to inform them that the data requires reprocessing to satisfy s.13(1)(3).
 - Proponents wishing to re-use data from existing s.13(1) approved met data sets should submit a request to update/reprocess the files with the new version of AERMET.
- The AERMET version used to generate the data is being included in current s.13(1) approval letters.
 - Indicates to proponents when they will need to request that the data be reprocessed, which would typically be upon MOECC transition to a new AERMET version.
 - Proponents currently have the option of requesting local met sets processed with other versions of AERMET as necessary.

Implementation Plan Step 5 – Review Existing s7 Notices Details

- MOECC proposes to review and potentially amend existing Section 7 Notices for AERMOD model versions that predate the upcoming regulatory version.
 - These Notices are very site specific and will be reviewed on a case by case basis
- As per requirements of O.Reg.419/05, after the Pre-Notification Date new/revised ESDMs and ECA applications using a non-regulatory version will require a Section 7 Notice.

Model Updates: Effect on ECA Applications (DRAFT)

- Once MOECC pre-notifies stakeholders, and then adopts new versions via EBR posting, requirements for use of specific model version(s) will affect new and previously submitted ESDM reports/ECA Applications
- **Proposed versions are AERMOD/AERMET v14134, ASHRAE 2011**
- MOECC have developed procedures for addressing potential issues with model versions.
 - These procedures differ based on WHEN the application was submitted
 - Once the model version update is in effect, the updates will apply to any ESDM reports **submitted** after the EBR posting date (i.e. Implementation Date).
- The first update cycle will be longer than 1-year
 - MOECC intends to give additional time for stakeholders to adjust to the process.
 - i. **Initial pre-notification targeted for March – April 2015, with formal implementation in October 2015.**
 - ii. Second pre-notification targeted for October 2016, with formal implementation in April 2017.

ECA Applications Submitted AFTER Pre-Notification, and BEFORE Implementation Date*

- Proponents must request a s7 Notice from EMRB to formalize model versions for submissions completed with non-regulatory versions.
 - MOECC may return submissions without a valid s7 Notice
- Submissions completed using older versions of AERMOD (<12345)
 - No effect on Approvals issued prior to the Implementation Date
 - Proponents to shift to the new regulatory version at the next required annual update
 - **EAB may advise proponents that more recent versions are preferred**
 - For the purpose of the Approval, the Notice will generally be valid until ECA issued.
 - For all other Reg 419 related requirements, Notice will likely expire upon adoption of new version.
- Submissions completed using more recent versions (v12345+)
 - No effect on Approvals issued prior to or after the Implementation Date
 - The Ministry is considering issuing s7 Notices that may be valid for 2 years after the Implementation Date and/or until ECA issued.

* This process is still DRAFT and may change prior to Pre-Notification based on stakeholder comments and feedback

ECA Applications Submitted AFTER Implementation Date*

- After the Implementation Date, MOECC will likely return submissions completed using non-regulatory versions without a s7 Notice
 - Submissions completed using a version that pre-dates the regulatory version of AERMOD
 - MOECC will likely request that proponents resubmit with the new regulatory model
 - Submissions completed using a version that post-dates the regulatory version
 - An existing, valid s7 Notice or Notice request should accompany the submission to satisfy the requirement to use an “approved dispersion model”
 - MOECC will consider issuing new Notices only for versions that post-date the regulatory version
- Submissions completed using the regulatory version or with a valid Notice
 - Application processed normally

* This process is still DRAFT and may change prior to Pre-Notification based on stakeholder comments and feedback

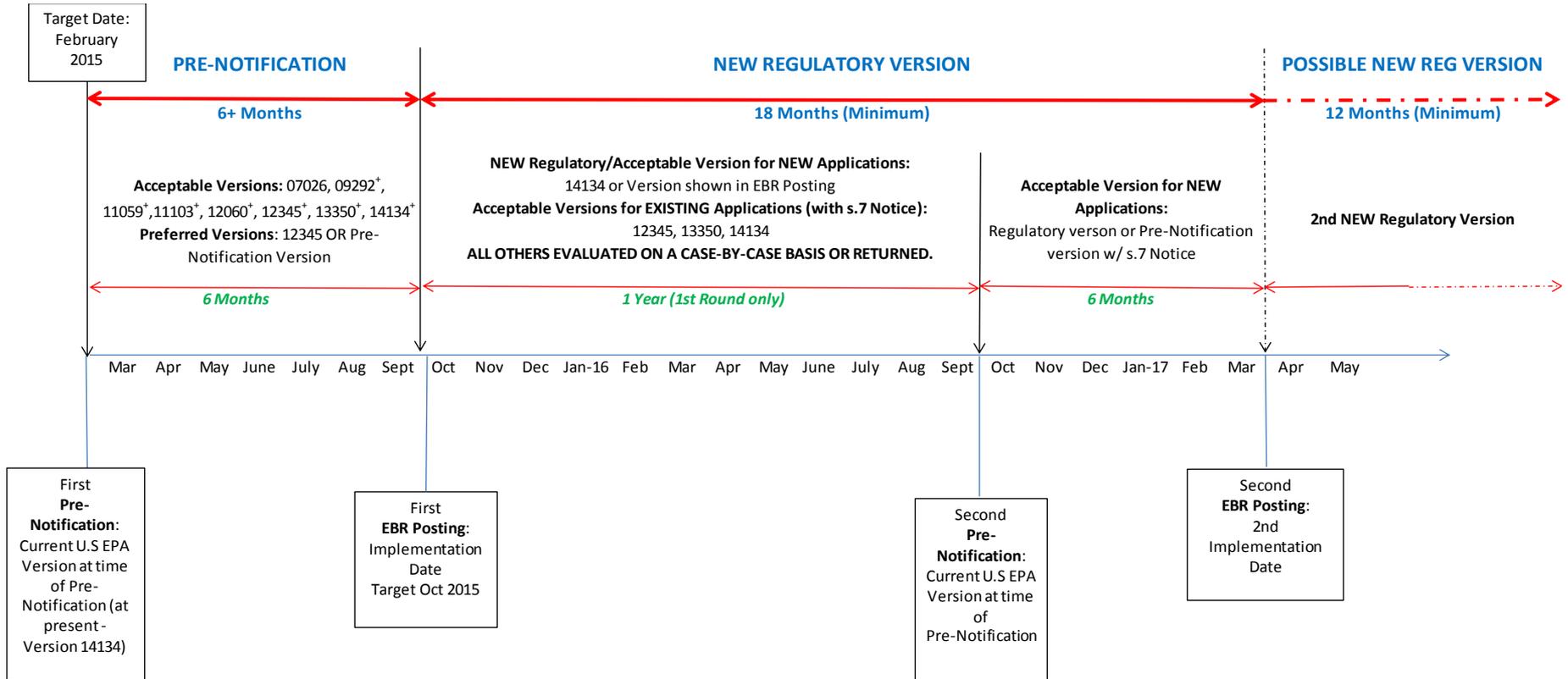
What to Expect

- After pre-notification and adoption, Ministry staff will pre-screen incoming air & noise applications for model versions to determine whether they should be returned or moved forward.
- Once assigned, review engineers will check/verify the model versions (AERMET/AERMOD) to determine which were used.
 - To use the future regulatory version, should also use the new regulatory meteorology OR site specific meteorology (s.13 approval) with the new AERMET version
- If the current or future regulatory version was **not** used, a s7 Notice is required
 - The Notice will have an expiry date/condition (i.e. valid until a certain date, ECA issued or until MOECC adopts a new version)

What to Expect (Cont'd)

- **If no s7 Notice or request included AND:**
 - Application submitted **BEFORE** the Implementation Date, **AND**
 - Used older AERMOD version (v09292, v11059, v11103, v11353, v12060), proponents should request a s7 Notice, which will likely expire upon adoption of the future regulatory version, or upon issuance of the Approval (for the purpose of the ECA).
 - » Notices for these versions will be issued on a case by case basis
 - Used newer AERMOD version (v12345, v13350), proponents should request a s7 Notice, which may expire within 2 years, adoption of a subsequent regulatory version, and/or issuance of the Approval.
 - Application submitted **AFTER** the Implementation Date
 - Application will likely be returned

Model Update Timeline (DRAFT)



Compliance Options

- Intent of 6 month (minimum) Pre-Notification period is to allow facilities to assess potential changes
 - Provides time to re-model and refine ESDM, and
 - Provides time to assess potential abatement solutions, if necessary
- A longer initial model update cycle is proposed to “catch up” to the Oct/Apr timeframe
 - Cycle #1 - Pre-notification in Feb 2015 and adoption in Oct 2015
 - Cycle #2 – Pre-notification in Oct 2016 and adoption in Apr 2017 (regular cycle)
- Where a model version change results in a change in compliance status, proponents should start a dialogue with their local District office as early as possible
 - MOECC staff in the District(s) and Region(s) will assist in the development of a path forward to help facilities manage compliance after the Implementation Date

Compliance Options (2)

- MOECC has a number of tools that can be used to manage compliance.
 - Can issue a short term transitional Order to require a facility to come into compliance within a certain time frame
 - Can open a window to allow a request for a Site-Specific Standard
 - Via Order (s7, 17 or 18(1) of the *EPA*)
 - Via s.7 Notice (s.32(1) paragraphs 6 or 7 of O.Reg.419/05)
 - Facilities can register for or explore development of a Technical Standard
 - Issuing these tools **takes time**. If needed, start the process **early!!!**
- Model Update Technical Subgroup acknowledged that the model updates should not be delayed any longer, but noted that a clear mechanism to remain in compliance should be available in O.Reg.419/05
 - Requested that an option be left open to develop such a mechanism at the next opportunity for a proposed Regulatory amendment
 - MOECC will leave this as an open item for continued future discussions

Questions?